

# **EXHIBIT 1**

**UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS**

SINGULAR COMPUTING LLC,

Plaintiff,

v.

GOOGLE LLC,

Defendant.

Civil Action No. 1:19-cv-12551-FDS

**NOTICE OF DEPOSITION OF GOOGLE LLC**  
**PURSUANT TO FED. R. CIV. P. 30(B)(6)**

PLEASE TAKE NOTICE that Plaintiff depose, by oral questions, Defendant, pursuant to Fed. R. Civ. P. 26 and Fed. R. Civ. P. 30(b)(6), regarding the matters identified in the attached Schedule A.

The deposition will occur remotely by videoconference, commencing at 9:00 am EST on October 23, 2020, or at another mutually agreed date and time. The deposition will continue from day to day until complete.

The deposition will be held before a qualified court reporter and will be recorded videographically and stenographically.

Prior to the deposition, Defendant shall designate in writing to Plaintiff the name(s) of the person(s) who will testify on its behalf in response to this Notice.

Dated: October 2, 2020

By: /s/ Paul J. Hayes  
Paul J. Hayes (BBO #227000)  
Matthew D. Vella (BBO #660171)  
Kevin Gannon (BBO #640931)  
Daniel J. McGonagle (BBO #690084)  
Michael J. Ercolini (*pro hac vice*)  
**PRINCE LOBEL TYE LLP**  
One International Place, Suite 3700

Boston, MA 02110  
Tel: (617) 456-8000  
Email: phayes@princelobel.com  
Email: mvella@princelobel.com  
Email: kgannon@princelobel.com  
Email: dmcgonagle@princelobel.com  
Email: mercolini@princelobel.com

ATTORNEYS FOR THE PLAINTIFF

**CERTIFICATE OF SERVICE**

I certify that on October 2, 2020, I served this document on Defendant by sending a copy via email to Defendant's counsel of record.

/s/ Paul J. Hayes

## **SCHEDULE A**

### **DEFINITIONS AND INSTRUCTIONS**

The following definitions and instructions shall apply to each of the following topics of examination.

1. “Google,” “you” “Defendant” or “your” means Google, LLC, its employees, officers, directors, attorneys, and its agents, parents, subsidiaries, branches, predecessors, or successors-in-interest, or any other persons who have acted or purported to act for its behalf.

2. “Plaintiff” or “Singular” means Singular Computing LLC.

3. “Accused Products” means all products, computer systems, devices, and other hardware/software identified in Plaintiff’s Amended Complaint (Dkt. 37) and in Plaintiff’s Infringement Contentions, including without limitation at least:

- i. Google Cloud Tensor Processing Unit Version 2 (“TPU v.2”);
- ii. Google Cloud Tensor Processing Unit Version 3 (“TPU v.3”);
- iii. Software that runs workloads on TPU v.2 or TPU v. 3 including TensorFlow; and
- iv. Larger compute systems that incorporate (i), (ii) and/or (iii) such as TPU Pods.

4. “Accused Services” means all Google services delivered in whole or in part by use of any Accused Product, including Translate, Photos, Search, Assistant, Gmail and Cloud (including Cloud AI and Cloud TPU) .

5. “Asserted Patents” or “Patents-in-Suit” refers, collectively, to US Patent Nos. 8,407,273 (“’273 Patent”); 9,218,156 (“’156 Patent”); and 10,416,961 (“’961 Patent”), as well as any other patent(s) that Plaintiff asserts in this action.

6. “Communication” means the transmittal or receipt of information (in the form of facts, ideas, inquiries, or otherwise) regardless of the medium used to transmit or receive the information.

7. “Document” is synonymous in meaning and equal in scope to the usage of this term in Fed. R. Civ. P. 34(a). Any draft or non-identical copy is a separate document within the meaning of this term. Documents include communications.

8. “Person” means any natural person or any business, legal, or governmental entity or association.

**MATTERS FOR EXAMINATION**

The deponent(s) shall be prepared to address the following topics:

1. The structure, function, and operation of the Accused Products, including those features and functionalities identified in Plaintiff's Infringement Contentions.
2. Source code relating to the Accused Products, including all register-transfer language (RTL), hardware description language (HDL), Verilog, and VHDL files.
3. Google's research and development efforts relating to the Accused Products, including Google's alleged conception and design of the Accused Products.
4. The dates (including the first and last dates) of the use, manufacture, sale, offer for sale, testing, and importation of the Accused Products.
5. Google's decision to develop, build, and implement in its data centers the Accused Products.
6. The structure, function, and operation of software utilized in connection with the Accused Products, including Google software and any third party software used to deliver Accused Services.
7. Google's instructions to any user (including any Google engineer, scientist, or technician), Google customer, or potential Google customer on how to use the Accused Products.
8. The circumstances under which Google first became aware of the '273 Patent.
9. The circumstances under which Google first became aware of the '156 Patent.
10. The circumstances under which Google first became aware of the '961 Patent.
11. The circumstances under which Google first became aware of Singular's technology, and under which Google first became aware of the patent-pending status of Singular's technology.
12. All investigations, discussions, analyses, opinions or advice (whether written or oral) concerning the '273 Patent, including, without limitation, the validity, inventorship, ownership, infringement, enforceability, or scope of the '273 Patent, or whether any specific product(s) does or does not infringe one or more claims of the '273 Patent.
13. All investigations, discussions, analyses, opinions or advice (whether written or oral) concerning the '156 Patent, including, without limitation, the validity, inventorship, ownership, infringement, enforceability, or scope of the '156 Patent, or whether any specific product(s) does or does not infringe one or more claims of the '156 Patent.

14. All investigations, discussions, analyses, opinions or advice (whether written or oral) concerning the '961 Patent, including, without limitation, the validity, inventorship, ownership, infringement, enforceability, or scope of the '961 Patent, or whether any specific product(s) does or does not infringe one or more claims of the '961 Patent.

15. Google's knowledge of Singular, its products, services, research, technology, employees, and intellectual property, including how and when Google first learned of each.

16. Google's decision to use the Accused Products to deliver in whole or in part any Google product (including without limitation the Accused Services), or any Google AI or machine learning process used to provide any Google product, including without limitation the Accused Services.

17. Google's efforts to design around any claim of the Asserted Patents.

18. Google's grounds for its contention that as of 2017 it believed it did not infringe any claim of the '273 and '156 Patents.

19. Google's grounds for its contention that it does not infringe any claim of the '961 Patent.

20. Any prior art or alleged prior art to the Asserted Patents of which Google is aware.

21. The commercial success of the Accused Products and of any products and services (including the Accused Services) that make use of the Accused Products.

22. The current popularity of the Accused Products and of any products and services (including the Accused Services) that make use of the Accused Products.

23. Past, current, and future demand for the Accused Products and for any products and services (including the Accused Services) that make use of the Accused Products.

24. Google's pricing for the Accused Products and for any products and services (including the Accused Services) that make use of the Accused Products.

25. The marketing of the Accused Products and of any products and services (including the Accused Services) that make use of the Accused Products.

26. The utility and advantages of the Accused Products as perceived by Google over any competing technologies.

27. Google's responses, supplemental responses, and amended responses to Singular's interrogatories in this action.

28. The organizational and hierarchical structure of the product group(s) and business segment(s) responsible (or formerly responsible) for the Accused Products, and specifically including those responsible for the design of TPU v.2 and TPU v.3.

29. Google's document retention policies, including for its storage, retention, archiving, and destruction of documents, including electronic documents.

30. Google's intellectual property policies and practices.

31. Any patents or patent applications filed by Google that would cover any aspect of the Accused Products; any continuations, continuations-in-part, or divisions thereof; and any reissues or extensions thereof.

32. US Patent No. 10,621,269.

33. Any documents created by or on behalf of Google, or received by Google, before the filing of the complaint in this action that reference one or more of the Asserted Patents.

34. Other patent litigation(s) involving any of the Accused Products.

35. Sworn testimony, including but not limited to deposition and trial testimony, by Google or anyone testifying on Google's behalf in any proceeding relating to the Accused Products.

36. Google's policies and practices concerning licensing intellectual property to and from others.

37. Licenses, patent licenses, settlement agreements, covenants not to sue, or other agreements entered into by Google relating to the Accused Products.

38. Patent acquisitions by Google relating to the Accused Products.

39. Royalties (including patent royalties) or license fees that Google has paid or is paying relating to the Accused Products.

40. Royalties (including patent royalties) or license fees that Google has collected or received, is collecting or receiving, or expects to collect or receive relating to the Accused Products.

41. Revenues and pre-tax income attendant to the Accused Products or attendant to any products or service (including the Accused Services) making use of the Accused Products.

42. Operating costs and/or expenses for the Accused Products or any products or services (including the Accused Services) making use of the Accused Products.

43. Research and development costs and expenses relating to the Accused Products.



44. Operating profits for the Accused Products, or any products or services (including the Accused Services) making use of the Accused Products.

45. Projections for sales or use of the Accused Products, or for any products or services (including the Accused Services) making use of the Accused Products.

46. Development profit and loss statements for the Accused Products, or any products or services (including the Accused Services) making use of the Accused Products.

47. Google's publicly-disclosed financial statements.

48. The monetary and/or nonmonetary value that Google's customers and end users of the Accused Products and Accused Services attribute to the features of the Accused Products, including the existence and substance of any related studies, surveys, presentations, reports, or other similar documentation.

49. The monetary and/or nonmonetary value that Google accords the features of the Accused Products and Accused Services, including the pricing of such features and the existence and substance of any related studies, surveys, presentations, reports, or other similar documentation.

50. Any comparisons of the Accused Products and Accused Services to comparable products and services of any other person or entity.

51. Google-internal or third-party reports, reviews and studies of all products in competition with the Accused Products and Accused Services.

52. Reports, reviews and/or studies of competitor systems and services employing any of the Accused Products or Accused Services.

53. Presentations, whether written, verbal, recorded, televised and/or broadcast (via the Internet or otherwise), concerning the Accused Products and Accused Services.

53. Google's business and/or financial relationship with any third party concerning the design, development, implementation, use, testing, sale, distribution, or promotion of the Accused Products, including any components and/or features thereof.

54. License agreements and contracts concerning the design, development, implementation, use, testing, sale, distribution, or promotion of the Accused Products, including any components and/or features thereof.

55. Internal analyses or market studies prepared by (or for) Google concerning the importance or benefits of the Accused Products and Accused Services, including any features or components thereof.

56. Profit and loss (P&L) statements of any product group or business segment(s) responsible (or formerly responsible) for the Accused Products or Accused Services.

57. Product Requirement Documents (PRD) or similar development planning documents concerning the Accused Products.

58. Competitive intelligence/analysis reports (internal and/or third-party) concerning the Accused Products and Accused Services.

59. Price lists, profit or loss statements or projections, and market studies relating to the sale of, or sale of services in connection with, the Accused Products or Accused Services.

60. Google's initial disclosures pursuant to Rule 26(a)(1) of the Federal Rules of Civil Procedure, including any documents or things identified in Google's initial disclosures.

61. Any documents or things Google expects to use, introduce into evidence, or otherwise rely upon at any hearing, trial, submission to the Court, or deposition in this matter.

62. Capital asset requests and analyses associated with developing Google's data centers without the Accused Products.

63. Google's long-term capital investment plans relating to its data centers.

64. Projections of Google's long-term data center needs and shortfalls.

65. Capital asset requests and analyses associated with developing Google's data centers with the Accused Products.

66. Operating budgets and plans for Google data centers operating without the Accused Products.

67. Operating budgets and plans for Google data centers operating with the Accused Products.

68. Profit and loss statements or other financial analyses prepared by Google related to the actual operation of its data centers with and without the Accused Products.

69. Google's business planning, long-term capital expenditure plans, or other studies from prior to the use of the Accused Products.

70. Studies performed either internally by Google or by third parties discussing system architecture for Google data centers with or without the Accused Products.

71. Internal studies by Google or third parties discussing the benefits of using the Accused Products as opposed to other products, computer systems, devices, and other hardware/software having architectures that differ from those used by the Accused Products.

72. Google's decision to invest in designing and making the Google Tensor Processing Unit v.1 ("TPU v.1") in-house, including business analyses, capital asset requests, research and development expenditure requests, research and development reports and presentations related to the development of the TPU v.1, and presentations to management and/or Google's board to support the decision to implement the TPU v.1.

73. Google's decision to invest in designing and making the TPU v.2 and TPU v.3 in-house, including business analyses, capital asset requests, research and development expenditure requests, research and development reports and presentations related to the development of the Accused Products, and presentations to management and/or Google's board to support the decision to implement the Accused Products.

74. The fabrication of the Accused Products, including costs of fabrication and testing of the Accused Products.

75. Budgets and forecasts relating to the development and operation of all Google Cloud businesses, including Cloud Platform, Cloud AI, and Cloud TPU.

76. Google's actual revenues, costs and profits from the operation of all Google Cloud businesses, including Cloud Platform, Cloud AI, and Cloud TPU, or any other Google service or business that makes use of the Accused Products.

77. Studies, analyses, and tests of the technical and costs benefits of the TPU v.1.

78. Studies, analyses, and tests of the technical and costs benefits of the Accused Products compared to TPU v.1.

79. Studies, analyses, and tests of the technical and costs benefits, including energy, maintenance, GPU purchases, and IT infrastructure technical and costs benefits due to the consolidation of Neural Networks training and inference on TPU v.2

80. Quantifications, evaluations and estimates of the value to Google of the benefits of using the Accused Products, including, but not limited to, improved search results, advertising placement, increases in volume of search and advertising, increased revenues, profits, advertising rates, and/or click-through rates.

54. Google's internal testing of the Accused Products, including tests measuring the benefits of implementing the Accused Products.

81. Incremental revenues and/or profits earned by Google from use of the Accused Products compared to other architectures.

82. The identity of all Google's products and services (including the Accused Services) that use the Accused Products, and when each such Google product or service first used the Accused Products.

83. Google's decision to implement the TPU v.1 in Google's products or services (including the Accused Services).

84. Google's acquisition of DeepMind Technologies, including without limitation purchase price allocations, the purchase rationale, board approvals, and studies and analyses of the activities of DeepMind Technologies prepared by or for Google.

85. Google's revenues, costs and profits from the operation of DeepMind Technologies.

86. Licensing or acquisition of any technology, intellectual property, or company associated with the operation of Google data centers or other hardware for artificial intelligence or machine learning operations.

87. Google's alleged conception, design, development and testing of the "bfloat16" number format and its use of the "bfloat16" number format in the Accused Products.

88. The identity of all employee(s) at Google who allegedly first conceived of the "bfloat16" number format and any applications thereof, including its use in the Accused Products.

89. Internal codenames, nicknames, or other names or titles used to refer to the Accused Products or the bfloat16 number format of the Accused Products, as well as any components thereof or hardware or software related thereto.

90. The basis for Google's determination that but for the Accused Products its data centers would have to be doubled, including identification of those who shared this view and those who did not share this view.

91. As of 2017, the average cost to build a data center.

92. As of 2017, the average cost to maintain a data center.

93. As of 2017, Google's corporate return on investment (ROI) policy.

94. Jeffrey Dean's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Jeffrey Dean referring or relating to the Accused Products.

95. Norman Jouppi's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Norman Jouppi referring or relating to the Accused Products.

96. James Laudon's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents,

presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by James Laudon referring or relating to the Accused Products.

97. Nan Boden's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Nan Boden referring or relating to the Accused Products.

98. Obi Felton's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Obi Felton referring or relating to the Accused Products.

99. Sebastian Thrun's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Sebastian Thrun referring or relating to the Accused Products.

100. Quoc Le's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Quoc Le referring or relating to the Accused Products.

101. Andrew Phelps' involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Andrew Phelps referring or relating to the Accused Products.

102. Astro Teller's involvement in the design, development, testing, use, and launch of the Accused Products, including the contents of any internal communications, documents, presentations, reports, investigations, emails, memoranda, or any other document authored, received, or reviewed by Astro Teller referring or relating to the Accused Products.